(No Model.)

H. H. SESSIONS.

RAILROAD CAR.

No. 373,098. Patented Nov. 15, 1887.

Fig. 1.

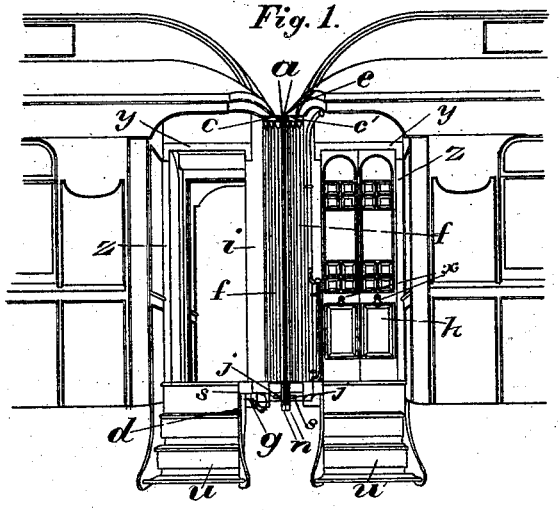


Fig. 2.

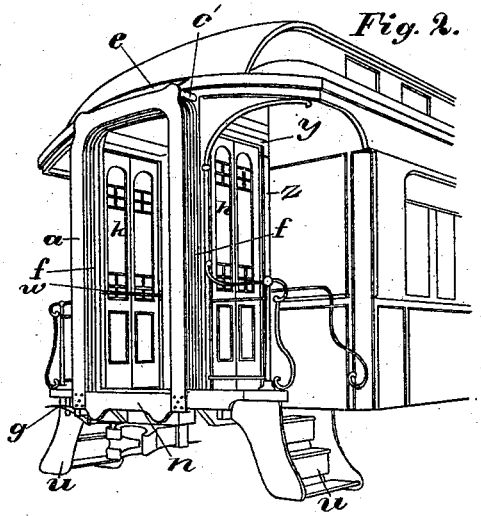
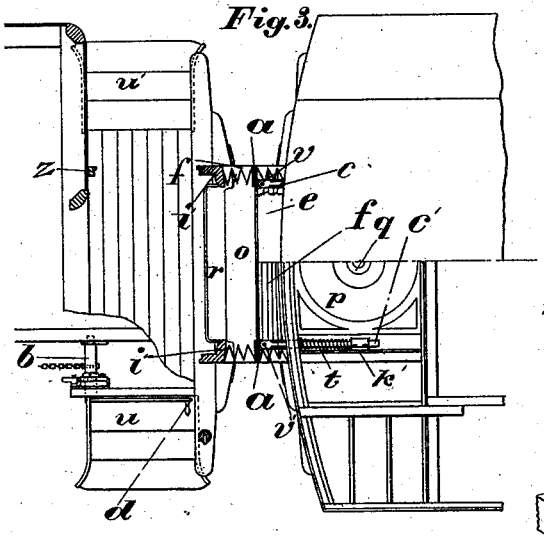


Fig. 3.



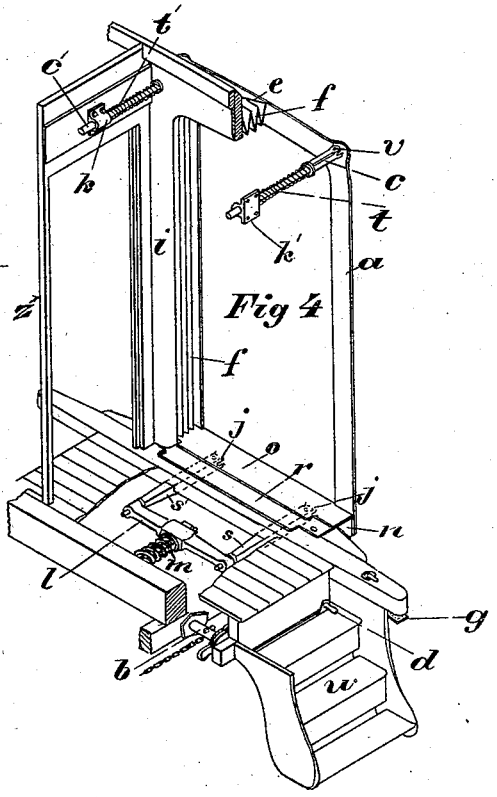


Fig 4

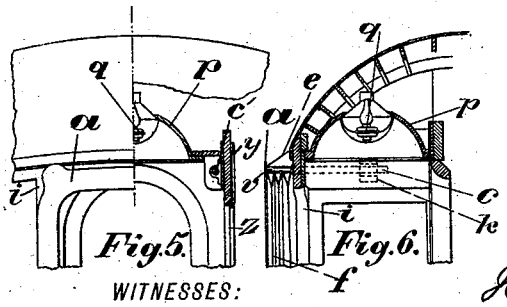


Fig. 5.

Fig. 6.

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HENRY HOWARD SESSIONS, OF PULLMAN, ASSIGNOR TO THE PULLMAN'S PALACE CAR COMPANY, OF CHICAGO, ILLINOIS.

RAILROAD-CAR.

SPECIFICATION forming part of Letters Patent No. 373,098, dated November 15, 1887.

Application filed April 29, 1887. Serial No. 236,581. (No model.)

To all whom it may concern:

Be it known that I, HENRY HOWARD SESSIONS, a citizen of the United States, residing at the village of Pullman, in the county of Cook and State of Illinois, have invented a new and useful Improvement in the Construction of Railroad-Cars; and I do hereby declare that the following specification, taken in connection with the drawings made a part of the same, is a full, clear, and exact description thereof.

The invention hereinafter particularly described is embodied in the application to the individual cars, which when coupled will compose a train, of a frame-shaped plate arranged in a vertical plane parallel with a vertical transverse plane passing through the car-body and projecting, by means of backing-springs, for a short distance beyond the end of the car. The height of said frame-plate for the best results should be substantially that of the height of the car to which it is attached, and the same should be so shaped as to allow a free communication between the ends of adjacent cars for the passage of persons through such frame-plates.

The purpose of the improvement is twofold—first, to diminish the racking effect upon a car-body, due to its momentum when it is suddenly brought from a state of motion to a state of rest from any cause, as well as the same injurious consequences when a car is suddenly started from a state of rest, and, secondly, to diminish the tendency to a swaying or oscillating movement which is developed whenever a train is running at high speed upon an ordinary railroad-track.

I have illustrated my improvement in the drawings by exhibiting the same in connection with another improvement in car construction, which consists of a vestibule attachment to the ends of railroad-cars for the purpose of completely inclosing the sides of the car-platform and allowing of a continuous inclosed aisle or passage-way between the adjacent ends of the coupled cars of a train. This vestibule feature is no part of the present invention.

My improvement can be usefully applied to cars constructed with such vestibules or to cars of ordinary construction having uninclosed platforms.

Figure 1 shows in perspective the ends of two cars coupled together with my improvement added. Fig. 2 shows in perspective portions of the side and end elevations of a single car. Fig. 3 is a plan of the platforms and portions of two cars coupled together, one portion showing a horizontal section through the vestibule and a part of the platform removed, and a part in a more elevated plane, showing the roof of the car with a portion of the hood removed. Fig. 4 is an isometric perspective drawing with a portion of the roof and end of car removed. Fig. 5 is a front elevation of the upper part of the vestibule of a car with a portion of the roof removed. Fig. 6 is a vertical longitudinal section of the upper part of a car provided with a vestibule.

So much of the drawings as represent the arrangement and construction of a vestibule attachment are not illustrative of any invention set forth in this patent, except as the same show in combination therewith the improvement hereinafter specifically described.

In the drawings, *a* indicates a frame-shaped plate of iron, of about six inches in width and about five-eighths of an inch in thickness. It is best shown in front view at Fig. 2 and in perspective at Fig. 4. The said dimensions are not material, provided the area of the face surface of the frame-plate is sufficient to furnish, when in contact under pressure with the frame-plate of an adjacent car in train, the needed degree of frictional resistance to the impulses which, in the running of a train, generate the disposition in the cars to oscillate laterally, as hereinafter more fully set forth, and provided, also, that the thickness of the frame-plate be sufficient to furnish the necessary strength to meet the conditions which exist when cars are being coupled into a train or when the cars are subjected to the shocks incident to sudden stoppages and startings of the train. It is far preferable that the frame-plate *a* should be made of either cast or wrought iron or steel; but other material—as, for example, oak or other hard woods—may be substituted therefor.

The height of the frame-plate *a* should, for the best results, be something over six feet in height, or as high as the wooden plate-girders of the frame of the car-body, and sufficient

to allow head room for a free passage of communication between the adjacent platforms of coupled cars. These frame-plates are arranged, as shown in the drawings, at each end of a car in vertical planes, which are parallel, or substantially so, with vertical transverse planes passing through the body of the car, and when the car is detached from a train these frame-plates will be projected beyond the ends of the car by the influence of backing springs, such as are indicated at Fig. 4 by *t t' m*. The arrangement of these backing-springs so that they will perform their office may be various and according to the judgment of the constructor. The end to be accomplished is to cause the frame-plates to act as spring-buffers whenever cars are being coupled or whenever a train is suddenly checked or started, and also to act as frictional resistance-plates to oppose or counteract the influences which tend to induce a swaying or oscillating movement in the several cars of a train.

In the present instance the front ends of the upper set of backing-springs take their bearings at the two upper corners, respectively, of the frame-plate, or, as shown in the drawings, against shoulders on the bars *c c'*, which bars are jointed to the frame-plate at *v'*. The rear ends of the springs abut against the ends of keepers *k k'*, and through the eyes of these keepers the bars *c c'* can slide. These keepers are shown in the drawings as bolted to the sides of the vestibule extension of the car-body, and the coiled springs *t t'* are, for convenience, wound around the rods or bars *c c'*. In case there be no vestibule-extension of the car-body, the keepers may be attached in any convenient way to the main body of the car, so as to furnish resisting abutments for the pressure-springs and guides for the rods connecting with the frame-plate.

The spring-pressure to act against the lower portion of the frame-plates is obtained, as exhibited in the drawings, from the coiled spring *m*, which takes a bearing at one end against the solid frame-work of the car and at the other end against a cross-head beneath the entrance platform car, which cross-head, by means of the rigid links *s s'*, is connected with the threshold of the frame-plate *a*, the said links or bars *s s'* being knuckle-jointed to the threshold-plate *c*.

In place of the arrangement of springs shown to exert pressure upon the frame-plate, it is obvious that any other can be substituted which will meet the requirements of necessity or convenience, according to the judgment or choice of the constructor.

The operation of my improvement in railroad-car construction will be readily understood from the foregoing description and drawings referred to in the same. To employ this improvement, it is not necessary that the ordinary spring-buffers in use should be dispensed with. In my judgment it would be well to retain such appliances to diminish the effect of shocks; but it is plain that they can be superseded by my improvement, if desired. The common spring-buffers in use are arranged in a horizontal plane, coinciding substantially with a plane passing through the framing sills of the car-platform. Whenever, in coupling cars together in a train, or whenever the movement of a train is suddenly arrested by the application of the brakes, the superstructure of cars of ordinary construction provided with such common spring-buffers has a tendency to continue in movement, and this tendency is only restrained by the framing and braces which attach such superstructure to the platform upon which the car-body rests.

By my improvement the body of the car is stayed against the racking effect of such shocks by the yielding frame-plate buffer, which is applied not merely in the line of the horizontal planes of the platforms, but also in the lines of vertical planes extending substantially to the top of the superstructure, whereby the duration of the life of the car is greatly promoted.

At Fig. 1 two cars provided with my improved frame-plates or frame-buffers are shown coupled together. The frame-plates *a* of the respective cars are necessarily brought face to face and are in close frictional contact, each being backed by powerful springs under tension and held in this relation to each other by the effect of the coupler attachments, such as are now in general use.

It is a common experience that when a train of drawing-room or sleeping cars is traveling at high speed there is induced in each car a tendency to sway or oscillate laterally. The force which induces this tendency may be relatively a slight matter; but its continued repetition results in an aggregation of impulses which accelerate the oscillations and cause unpleasant effects upon the passengers, especially when the road-bed has reversed curves, even of great radius. Again, the effect of this motion and the arresting of it when the train takes a curve in the opposite direction is severely racking upon the frame-work of the cars. Especially is this experienced in trains of sleeping-cars which are provided with upper sleeping-berths, constituting, when occupied, a weight elevated high above the center of gravity. The effect of my improvement is to provide a resistance to this tendency to oscillation by checking the same at the outset before the impulses which produce it have accumulated. The surfaces of the spring-backed frame-plates in contact are capable of resisting all ordinary impulses to oscillation induced by the movement of the train. Moreover, as the cars of a train do not generally sway in unison, but oscillate according to the effect of particular accidents or influences, the effect of combining the cars of a train by the aid of frictional surfaces in contact under considerable pressure, such as I have shown, is to dissipate all the lateral movements of each

car throughout all the other cars so connected, and thus give steadiness to the whole train. This result will not only greatly facilitate the ease in passing from one car to another, but will enable trains of the same weight and motive power to be run safely and comfortably at higher speeds over the same road-bed than heretofore.

While I have described and shown a frame-plate backed by springs as the preferred form for my vertically-arranged spring-buffer, which also performs the said office of counteracting the impulses which generate oscillating or swaying movements in trains of cars in motion, I do not limit myself to the physical presence of a frame or rectangular plate of metal or wood backed by springs, as described. If the entrance-platforms of the cars are to be inclosed by a vestibule, as shown in the drawings, then a frame is obviously most desirable, because it enables the joint between two adjacent coupled cars to be tightly closed against the entrance of dust and cinders; but my invention will be embodied if, in place of a continuous frame, *a*, there be substituted a system of separate plates or buffers backed by springs arranged framewise and so as to carry out the mode of operation of the frame-plates, as hereinbefore described; and therefore in this specification I include under the term "frame-plate" the construction specifically shown, as well as the formal and obvious modification suggested. My invention will also be employed if, in combination with the ordinary platform-buffer in common use in railway-carriages, there be arranged a spring-buffer above the doorway or near to the roof of the car, so that when the said cars are coupled the confronting faces of the said elevated buffers upon each of the cars will press frictionally against each other under the force of pressure-springs applied to the rear faces of the buffer.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. The combination, with the end of a railway-car, of a frame-plate or equivalent series of buffers backed by springs, arranged with its face in a vertical plane and normally projecting beyond the end of the car, whereby, upon the coupling of two cars, a spring-buffer will be interposed between the superstructures of such adjacent cars above their platforms, and also frictional surfaces under opposing spring-pressures to prevent the racking of the car-frames upon sudden stoppages and to oppose the tendency of the cars to sway laterally when in motion, substantially as hereinbefore set forth.

2. The combination of a spring-buffer or friction-plate with the ends of each of the adjacent cars of a train, said buffers being located on the ends of the superstructures of the cars, respectively, and substantially at the tops of the same, and so arranged that when the two cars are coupled the faces of the buffers will bear against each other in contact under pressure, substantially as and for the purposes specified.

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Witnesses:
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